

Claim 1 (Previously Amended) A fiber mat separator useful as an electrolyte reservoir in a lead acid battery wherein the fiber mat separator comprises an acid resistant metal impurity inhibiting amount of micronized porous organic polymer particles having a 50 percent number count less than about 2 microns and functional groups on the internal surfaces of the micronized porous organic polymer particles which have a preferential affinity over lead ion for at least one electrolyte soluble metal cation impurity ion more nobler than lead at the discharge charge electrochemical and sulfuric acid molarity conditions of the battery provided that the metal cation impurity ion is not detrimentally desorbed or released under said conditions, soluble lead ion has a reduced affinity for bonding with the functional groups and said micronized porous organic polymer particles are accessible to the metal impurity ion containing electrolyte to allow said ion to permeate the internal surfaces of the micronized organic macroporous polymer particles.

Claim 2 (Previously Amended) The separator of Claim 1 wherein the micronized porous organic polymer particles have acid functional groups.

Claim 3 (Previously Amended) The separator of Claim 2 wherein the acid functional groups are aminophosphonic.

Claim 4 (Previously Amended) The separator of Claim 1 wherein the micronized porous organic polymer particles have thiouronium functional groups.

Claim 5 (Previously Amended) The separator of Claim 3 wherein the micronized porous organic polymer particles are cross-linked polystyrene and the cross-linking is by divinylbenzene.

Claim 6 (Previously Amended) The separator of Claim 4 wherein the micronized porous organic polymer particles are cross-linked polystyrene and the cross-linking is by divinylbenzene.

Claim 7 (Previously Amended) The separator of Claim 3 wherein the metal cation impurity ion is selected from the group consisting of antimony and iron.

Claim 8 (Previously Amended) The separator of Claim 4 wherein the metal cation impurity ion is silver.

Claim 9 (Previously Amended) The separator of Claim 1 wherein the number count is less than one about micron.

Claim 10 (Previously Amended) The separator of Claim 3 wherein the number count is less than one about micron.

Claim 11 (Previously Amended) A fiber mat separator useful as an electrolyte reservoir in a lead acid battery wherein the fiber mat separator comprises an acid resistant metal impurity inhibiting amount of micronized porous organic polymer particles having functional groups on the internal surfaces of the micronized porous organic polymer particles which have a preferential affinity over lead ion for at least one electrolyte soluble metal cation impurity ion more nobler than lead at the discharge charge electrochemical and sulfuric acid molarity conditions of the battery provided that the metal cation impurity ion is not detrimentally desorbed or released under said conditions, soluble lead ion has a reduced affinity for bonding with the functional groups and macroporous particles having an average particle size distribution less than 25 microns and a pore size distribution which allows for a plurality of said micronized porous organic polymer particles to be associated with the internal porosity of said

macroporous particles and said micronized porous organic polymer particles and macroporous particles are accessible to the metal impurity ion to allow said ion to permeate the internal surface of the micronized porous organic polymer particles.

Claim 12 (Previously Amended) The separator of Claim 11 wherein the micronized porous organic polymer particles have acid functional groups.

Claim 13 (Previously Amended) The separator of Claim 12 wherein the acid functional groups are aminophosphonic.

Claim 14 (Previously Amended) The separator of Claim 11 wherein the micronized porous organic polymer particles have thiouronium functional groups.

Claim 15 (Previously Amended) The separator of Claim 12 wherein the micronized porous organic polymer particles are cross-linked polystyrene and the cross-linking is by divinylbenzene.

Claim 16 (Previously Amended) The separator of Claim 13 wherein the micronized porous organic polymer particles are cross-linked polystyrene and the cross-linking is by divinylbenzene.

Claim 17 (Previously Amended) The separator of Claim 13 wherein the metal cation impurity ion is selected from the group consisting of antimony and iron.

Claim 18 (Previously Amended) The separator of Claim 14 wherein the metal cation impurity ion is silver.

Claim 19 (Previously Amended) The separator of Claim 11 wherein the micronized porous organic polymer particles have a 50% number count less than about two microns.

Claim 20 (Previously Amended) The separator of Claim 13 wherein the micronized porous organic polymer particles have a 50% number count less than about two microns.

Claim 21 (Currently Amended) A fiber mat separator useful as an electrolyte reservoir in a lead acid battery wherein the fiber mat separator comprises an acid resistant metal impurity inhibiting amount of micronized porous organic polymer particles having functional groups on the internal surfaces of the micronized porous organic polymer particles which have a preferential affinity over lead ion for at least one electrolyte soluble metal cation impurity ion more nobler than lead at the discharge charge electrochemical and sulfuric acid molarity conditions of the battery provided that the metal cation impurity ion is not detrimentally desorbed or released from the functional groups under said conditions, soluble lead ion has a reduced affinity for bonding with the functional groups and macroporous particles having an average particle size distribution less than 25 microns and a pore size distribution which allow for a plurality of micronized porous organic polymer particles to be associated with the internal porosity of said macroporous particles and said micronized porous organic polymer particles and said macroporous particles are associated with each other through a cationic water soluble linking ~~polymer~~ agent and accessible to the metal impurity ion containing electrolyte to allow said ion to permeate the internal surface of the micronized porous organic polymer particles.

Claim 22 (Previously Amended) The separator of Claim 21 wherein the micronized porous organic polymer particles have acid functional groups.

Claim 23 (Previously Amended) The separator of Claim 22 wherein the acid functional groups are aminophosphonic.

Claim 24 (Previously Amended) The separator of Claim 21 wherein the micronized porous organic polymer particles have thiouronium functional groups.

Claim 25 (Previously Amended) The separator of Claim 22 wherein the micronized porous organic polymer particles are cross-linked polystyrene and the cross-linking is by divinylbenzene.

Claim 26 (Previously Amended) The separator of Claim 24 wherein the micronized porous organic polymer particles are cross-linked polystyrene and the cross-linking is by divinylbenzene.

Claim 27 (Previously Amended) The separator of Claim 23 wherein the metal cation impurity ion is selected from the group consisting of antimony and iron.

Claim 28 (Previously Amended) The separator of Claim 24 wherein the metal cation impurity ion is silver.

Claim 29 (Previously Amended) The separator of Claim 21 wherein the micronized porous organic polymer particles have a 50% number count less than about two microns.

Claim 30 (Previously Amended) The separator of Claim 23 wherein the micronized porous organic polymer particles have a 50% number count less than about two microns.

Claim 31 (Previously Amended) The separator of Claim 21 wherein the fibers in the fiber mat separator are selected from the group consisting of glass, organic polymer and mixtures thereof.

ES-95
10/090,930

Claim 32 (Previously Amended) The separator of Claim 31 wherein the fibers are
predominantly glass microfibers.
